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(54) Title: MAMMALIAN SERINE RACEMASE

(57) Abstract

High levels of D–serine occur in mammalian brain, where it appears to be an endogenous ligand of the "glycine site" of NMDA receptors. We have purified from rat brain a soluble enzyme that catalyzes the direct racemization of L–serine to D–serine. Purified serine racemase has a molecular weight of 37 kDa and requires pyridoxal 5'–phosphate for its activity. The enzyme is highly selective toward L–serine, failing to racemize any other amino acid tested. We have also identified polynucleotide sequences which encode mammalian, including human, serine racemase. Compounds which modulate the activity of mammalian serine racemase are useful for treating conditions and diseases which involve overstimulation of NMDA receptors, such as stroke and various neurodegenerative diseases.